

Direct healthcare cost of cachexia in patients with breast, colorectal, lung, pancreatic, and prostate cancers: a retrospective observational study

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INTRODUCTION

- Cachexia, a multifactorial syndrome characterized by severe body weight, fat, and muscle loss, is a common complication in patients with malignant solid tumors.¹
- It is associated with poor prognosis, reduced treatment response, and impaired quality of life.^{2,3}
- Despite its clinical significance, the economic burden of cachexia among cancer patients remains poorly understood.⁴

OBJECTIVE

- This study aimed to compare the direct healthcare costs in patients with breast, colorectal, lung, pancreatic, and prostate cancers, with and without cachexia.

METHODS

Study Design

- The study was a retrospective observational analysis of the deidentified Optum Market Clarity database.

General eligibility

- Inclusion criteria
 - New diagnosis of breast, colorectal, lung, pancreatic, or prostate cancer (malignant neoplasm) between October 1, 2016, and September 30, 2022, based on International Classification of Disease, 10th Edition (ICD-10) diagnosis codes.
 - Aged ≥19 years at the cancer index date.
 - ≥12 months of data before the cancer index date.
 - ≥12 months of data after the cancer index date (or death if during this period).
- Exclusion criterion was personal history of malignancy based on ICD-10 diagnosis codes in the 12 months prior to the cancer index date.

Cancer index date

- Newly diagnosed cancer was based on 1+ inpatient claim/ encounter with a relevant ICD-10 diagnosis code or 2+ selected outpatient claims/encounters ≥30 days apart with a relevant ICD-10 diagnosis code.
- The date of the first inpatient claim/encounter or second selected outpatient claim/encounter was deemed the cancer index date.

Other eligibility

- Patients were required to have ≥2 bodyweight measurements within 150–210 days, with ≥1 of those measurements occurring after the cancer index date.
- Cachexia was defined as ≥5% bodyweight loss in 150–210 days, as per the Fearon criteria.²
 - The date of the second bodyweight measurement where ≥5% bodyweight loss occurs in 150–210 days was deemed the cachexia index date.
- Patients with the same types of solid tumors who did not have ≥5% bodyweight loss in 150–210 days served as controls.
 - The date of the second bodyweight measurement without ≥5% bodyweight loss in 150–210 days was deemed the control index date.
- Within each cancer type, inverse probability of treatment weight (IPTW) was used to balance covariates between groups with or without cachexia.

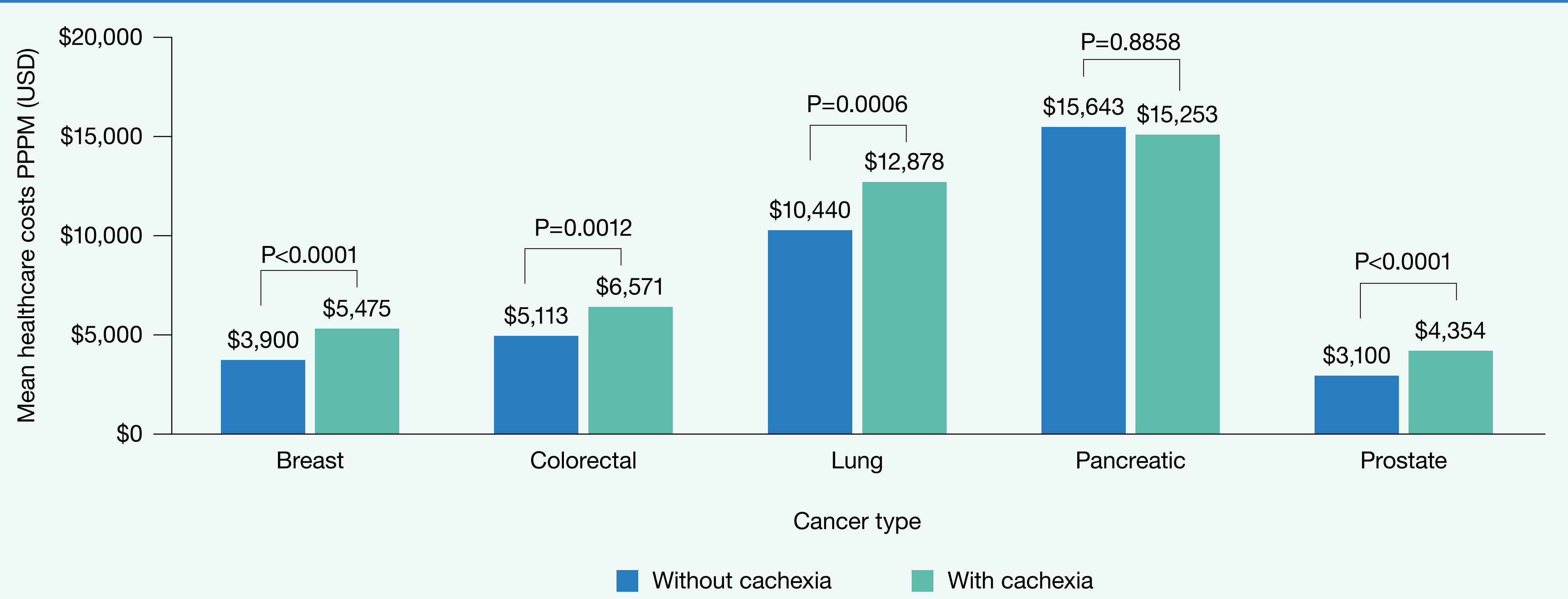
Endpoints/Outcomes

- The primary outcome was the mean total healthcare cost per patient per month (PPPM) during the 12 months following the cachexia index date.
 - Costs were categorized by care setting as hospital inpatient, hospital outpatient, office, home/telehealth, and all other settings.
 - Patients were also stratified by metastatic status (with or without).
- T-tests were used to compare costs in cachexia vs controls by tumor type.

RESULTS

- The study included a total of 27,428 patients (**Table 1**).
- Patient demographics (after IPTW) by cachexia status are presented in **Table 2**.
- Mean (SD) total healthcare costs PPPM were significantly higher in cachexia vs controls in breast, colorectal, lung, and prostate cancers (**Figure 1**).
 - There was no significant difference between cachexia and controls in healthcare costs for patients with pancreatic cancer.
- The most significant differences in costs between cachexia and controls were seen in hospital outpatient (breast), office (breast, colorectal), and hospital inpatient (prostate) (**Table 3**).
- In patients with metastases, costs with cachexia were significantly higher in lung and prostate cancer vs without cachexia. In patients without metastases, significantly higher costs were seen in those with cachexia vs controls in all cancer types except pancreatic (**Table 4**).

Figure 1: Overall mean PPPM healthcare costs by cancer type



PPPM=per patient per month

Table 1: Sample size with and without cachexia by cancer type

Cancer type	Cachexia, n	Control, n	Total, N
Breast	3595	6905	10,500
Colorectal	1683	1621	3304
Lung	1845	1500	3345
Pancreatic	350	125	475
Prostate	2865	6939	9804
Total	10,338	17,090	27,428

Table 2: Patient demographics after IPTW

n (%) ^a	Breast, colorectal, lung, pancreatic, or prostate cancer	
	Without cachexia	With cachexia
Patients, n	17,090	10,338
Gender		
Female	8600 (50.0)	5702 (55.0)
Male	8453 (50.0)	4637 (45.0)
Age, mean (SD), y	66.9 (10.8)	66.9 (11.4)
Race		
African American	2213 (13.0)	1326 (13.0)
Asian	237 (1.0)	141 (1.0)
Caucasian	13,891 (81.0)	8454 (82.0)
Other/Unknown	712 (4.0)	438 (4.0)
Insurance type		
Commercial	6260 (37.0)	4719 (46.0)
Medicaid	703 (4.0)	523 (5.0)
Medicare	5194 (30.0)	3934 (38.0)
Other	289 (2.0)	190 (2.0)
Uninsured	257 (2.0)	186 (2.0)
Unknown	7966 (47.0)	3657 (35.0)

^a Except where otherwise noted.
Note: Within each cancer type, patient demographics were balanced between groups with and without cachexia after IPTW (ie, standard mean difference <0.1 for gender, age, race, ethnicity, insurance type, and geographic region).
IPTW=inverse probability of treatment weighting

Table 3: Healthcare costs by cachexia status

Cost by place of service, mean (SD), USD ^a	Breast cancer			Colorectal cancer			Lung cancer			Pancreatic cancer			Prostate cancer		
	Without cachexia	With cachexia	P value	Without cachexia	With cachexia	P value	Without cachexia	With cachexia	P value	Without cachexia	With cachexia	P value	Without cachexia	With cachexia	P value
Patients, n	6905	3595		1621	1683		1500	1845		125	350		6939	2865	
Hospital outpatient	\$1,476 (\$3,900)	\$2,254 (\$5,089)	<0.0001	\$1,251 (\$4,472)	\$1,572 (\$3,997)	0.0302	\$2,550 (\$6,642)	\$3,049 (\$7,055)	0.0359	\$2,666 (\$5,519)	\$3,582 (\$7,084)	0.1412	\$1,022 (\$2,806)	\$1,246 (\$2,984)	0.0006
Office	\$492 (\$1,539)	\$755 (\$2,704)	<0.0001	\$374 (\$851)	\$562 (\$1,608)	<0.0001	\$1,525 (\$5,014)	\$1,305 (\$4,553)	0.1911	\$500 (\$1,978)	\$1,319 (\$3,674)	0.0020	\$438 (\$1,184)	\$454 (\$1,268)	0.5440
Hospital inpatient	\$453 (\$3,298)	\$615 (\$3,082)	0.0124	\$1,642 (\$7,968)	\$2,033 (\$6,966)	0.1347	\$2,785 (\$11,099)	\$4,079 (\$13,859)	0.0028	\$7,028 (\$19,350)	\$5,284 (\$11,779)	0.3442	\$518 (\$2,500)	\$1,061 (\$4,745)	<0.0001
Home/Telehealth	\$80 (\$410)	\$88 (\$358)	0.3447	\$87 (\$254)	\$183 (\$1,008)	0.0001	\$186 (\$609)	\$212 (\$526)	0.2036	\$216 (\$887)	\$547 (\$3,545)	0.1078	\$45 (\$244)	\$73 (\$350)	0.0001
Other	\$1,399 (\$5,212)	\$1,763 (\$5,127)	0.0006	\$1,759 (\$7,149)	\$2,220 (\$8,204)	0.0852	\$3,394 (\$9,892)	\$4,232 (\$12,766)	0.0328	\$5,233 (\$12,527)	\$4,521 (\$9,670)	0.5636	\$1,078 (\$4,724)	\$1,520 (\$5,378)	0.0001

^a Except where otherwise noted.

CONCLUSIONS

- Cachexia is associated with significant increases in PPPM healthcare costs among patients with incident breast, colorectal, lung, and prostate cancers.
- There is a non-significant increase in costs in patients with pancreatic cancer who have cachexia compared with those without cachexia.
- The differences in costs are primarily driven by hospital outpatient and inpatient costs.
- Similar findings were observed in costs when comparing patients with vs without cachexia among subgroups with and without metastasis.

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DISCLOSURES

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